

Tender

for

Supply & Installation of

**Lab Components: Filters, Amplifiers, Mixer, Demodulators, Modulator**

at

Indian Institute of Technology Jodhpur

NIT No. : IITJ/SPS/EE/1/1(I)/2015-16/30  
NIT Issue Date : 21 August 2015  
Last Date of Submission : 07 September 2015 by 3:00 PM



॥ त्वं ज्ञानमयो विज्ञानमयोऽसि ॥

Indian Institute of Technology Jodhpur  
Old Residency Road, Ratanada, Jodhpur – 342011, Rajasthan  
Telefax: 0291- 2449011, email: sps@iitj.ac.in

## Notice Inviting Tender

Indian Institute of Technology (IIT), Jodhpur, Rajasthan (hereinafter referred to as the “Institute”) an Educational Institute of National Importance, invites sealed tenders from the authorized distributors/dealers only for supply and installation of the following item at the Institute. You are requested to quote your best offer along with the complete details of specifications, terms & conditions. The tender document can be downloaded from the Institute website at URL Link: <http://www.iitj.ac.in> or from Central Public Procurement Portal link: <http://www.eprocure.gov.in>.

S. No.	Item Description	Quantity
1.	As per Annexure-I (Page no.6-17)	As per Annexure-I (Page no.6-17)

Quotation should be sealed and superscribed with tender number and due date of submission and address to:

“Officer-in-charge  
Office of Stores and Purchase  
IIT Jodhpur  
Old Residency Road, Ratanada  
Jodhpur – 342011, Rajasthan”

The sealed quotations should reach the Institute, latest by September 07, 2015 by 03:00 PM and it will be opened on same day at 04:00 PM in the Conference Room, Administrative Block of the Institute in the presence of the bidder(s) or their authorized representative(s), who will present at the scheduled date and time.

### Terms & Conditions:

1. **Earnest Money Deposit:** The bidder shall be required to submit the Earnest Money Deposit (EMD) for an amount of Rs.5,500/- (Rupees Five Thousand Five Hundred only) which is refundable and a non-refundable tender fee of Rs.200/- (Rupees Two Hundred only) by way of

demand draft only. The demand drafts shall be drawn in favour of “Director, IIT Jodhpur” payable at Jodhpur.

The Earnest Money Deposit of the tenderer, whose tender has been accepted, will be returned on the submission of the performance security, and for unsuccessful bidder(s) it would be returned after award of the contract. Earnest money deposit of the successful tenderer shall be forfeited, if it refuses or neglects to execute the order or fails to furnish the required performance security within the time frame as specified by the Institute.

After the award of the contract to the successful tenderer, the earnest money deposit of the unsuccessful tenderer(s) will be refunded within 30 days.

Bid(s) received without demand drafts of EMD and tender fees shall be liable for rejection.

The firms who are registered with National Small Industries Corporation (NSIC) / or Small Scale Industrial (SSI) are exempted to furnishing the EMD and tender fee.

**2. Rates:** Rates may be quoted in INR or in Foreign Currency on F.O.R.destination at IIT Jodhpur, Old Residency Road, Ratanada, Jodhpur – 342011, Rajasthan on DOOR Delivery Basis, inclusive of all the charges, with breakups as:

- (i) Basic Cost.
- (ii) VAT / CST as applicable.
- (iii) Total Cost (F.O.R at IIT Jodhpur).

Note: Institute is registered with DSIR, Govt. of India (Custom Duty Notification No. 51/96- Custom dt: 23 July, 1996 and Central Excise Duty Notification No. 10/97- Central Excise dt: 1 March, 1997) and is therefore, exempted from Excise Duty and partial exempted from Custom Duty (CD applicable to IIT Jodhpur is 5.15%). Exemption certificate of the same shall be issued.

**3. Validity:** The quoted rates must be valid for period of 90 days from the date of closing of the tender. The overall offer for the assignment and bidder(s) quoted price shall remain unchanged during the period of validity. If the bidder quotes the validity shorter than the required period, the same will be treated as unresponsive and it may be rejected.

In case the tenderer withdraws, modifies or change his offer during the validity period, bid is liable to be rejected and the earnest money deposit shall be forfeited without assigning any reason thereof. The tenderer should also be ready to extend the validity, if required, without changing any terms, conditions etc. of their original tender.

4. **Delivery period:** All the goods ordered shall be delivered within 04 weeks from the date of issue of the purchase order. All the aspects of safe delivery and commissioning shall be the exclusive responsibility of the supplier.

If the supplier fails to deliver and commissioning of the goods on or before the stipulated date, then a penalty at the rate of 1% per week of the total order value shall be levied subject to maximum of 10% of the total order value.

**5. Guarantee / Warranty:**

Tender must be quoted with three (03) years warranty on site and it will commence from the date of the satisfactory installation / commissioning of equipment against the defect of any manufacturing, workmanship and poor quality of components.

**6. Performance Security:**

After the award of work, the supplier shall be required to submit the performance security in the form of irrevocable bank guarantee in the prescribed format (Annexure-II) issued by any Nationalised Bank / or Fixed Deposit Receipt, for an amount equal to the 10% of order value and **it will be kept valid for a period of 60 days beyond the date of completion of warranty period. Warranty Period will be commenced from the date of the installation of the supplied item. Hence, be careful at the time of calculation of the validity date of Performance Bank Guarantee.**

**7. Payment Terms:** 90% payment against delivery and satisfactory installation, and balance 10% after the submission of Performance security. It is must to submit the Performance Security within one month after the delivery of the ordered material, otherwise the remaining 10% payment (equal to the amount of Performance Security) will be forfeited, due to noncompliance of tender Terms & Conditions.

8. Signed & stamped compliance sheet of the technical specification of the goods with technical printed literature along with Bill of Material (BoM) mentioning all the terms & conditions clearly, must be enclosed with the bid.

**9.** Bidder shall submit a copy of the tender document and addenda thereto, if any, with each page of this document should be signed and stamped to confirm the acceptance of the entire terms & conditions as mentioned in the tender enquiry document.

**10. Applicable Law:**

- The contract shall be governed by the laws and procedures established by Govt. of India, within the framework of applicable legislation and enactment made from time to time concerning such Commercial dealings / processing.
- Any disputes are subject to exclusive jurisdiction of Competent Court and Forum in Jodhpur, Rajasthan, India only.
- The Arbitration shall be held in accordance with the provisions of the Arbitration and Conciliation Act, 1996 and the venue of arbitration shall be at Jodhpur. The decision of the Arbitrator shall be final and binding on both the parties.
- Force Majeure: Any delay due to Force Majeure will not be attributable to the supplier.

**11.** After due evaluation of the bid(s), the Institute will award the contract to the lowest evaluated responsive tenderer(s).

**12.** Conditional bid will be treated as unresponsive and it may be rejected.

**13.** The Institute reserves the right to accept in part or in full or reject any or more quotation(s) without assigning any reasons or cancel the tendering process and reject all quotations at any time prior to award of contract, without incurring any liability, whatsoever to the affected bidder or bidder(s).

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# Annexure-I

## Specifications for Amplifier Type-1 (LNA, 50-3000MHz)

S. No.	Parameters	Unit	Specifications
1.	Frequency Range	MHz	50-3000
2.	Noise Figure	dB	$\leq 1.2$
3.	Output power at 1dB compression typ.	dBm	$\geq 17$
4.	Input power maximum	dBm	21
5.	Gain:  50-1000 MHz  1000-2000 MHz  2000-3000 MHz	  dB	  $\geq 13$  $\geq 8$  $\geq 4$
6.	VSWR(:1) In  Out	-  -	$\leq 2.5$  $\leq 2.5$
7.	DC Power	Volt(V)	5
8.	Operating and Storage temp	$^{\circ}\text{C}$	0-55
9.	Connectors	SMA	SMA

### General requirements:

- **Guarantee/warranty:** Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.
- **Data sheet should have circuit diagrams and performance data.**
- **Vendor shall send the quotation with compliance statement to individual specifications and supporting document to the statement.**

### Specifications for Amplifier Type-2 (50-1000MHz)

S. No.	Parameters	Unit	Specifications
1.	Frequency Range	MHz	50-1000
2.	Gain typically	dB	$\geq 20$
3.	Max. output power at 1db compression typically	dBm	$\geq 25$
4.	Noise figure	dB	$\leq 4$
5.	VSWR(:1)		
	In	-	$\leq 2.0$
	Out	-	$\leq 2.0$
6.	DC Power	Volt(V)	12
7.	Operating and Storage temp	$^{\circ}\text{C}$	0-55
8.	Connectors	SMA	SMA

**General requirements:**

- **Guarantee/warranty:** Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.
- **Data sheet should have circuit diagrams and performance data.**
- **Vendor shall send the quotation with compliance statement to individual specifications and supporting document to the statement.**

### Specifications for AmplifierType-3 (500-1000MHz, 3Watt)

S. No.	Parameters	Unit	Specifications
1.	Frequency Range	MHz	500-1000
2.	Gain	dB	≥ 35
3.	Gain Flatness	dB	±1.0
4.			
5.	Output Power at 1dB compression	dBm	35
6.	Maximum Input RF Power	dBm	0
7.	VSWR In	-	2.0
	Out	-	2.5
8.	Noise figure	dB	< 4
9.	DC Power	Volt(V)	≤ 24
		Current(A)	≤ 3
10.	Operating and Storage temp	°C	0-55
11.	Connectors	SMA	SMA

**General requirements:**

- **Guarantee/warranty: Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.**
- **Data sheet should have circuit diagrams and performance data.**
- **Vendor shall send the quotation with compliance statement to individual specifications and supporting document to the statement.**



### **Specifications for Demodulator Type-1 (95-105MHz)**

<b>S. No.</b>	<b>Parameters</b>	<b>Unit</b>	<b>Specifications</b>
1.	Frequency Range	MHz	95-105
2.	I & Q Frequency	MHz	DC-2
3.	Amplitude unbalance maximum	dB	≤0.5
4.	Phase unbalance maximum	Degree	≤ 3
5.	Conversion loss	dB	≤ 7
6.	Operating and Storage temp	°C	0-55
7.	Connectors	SMA	SMA

**General requirements:**

- **Guarantee/warranty: Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.**
- **Data sheet should have circuit diagrams and performance data.**
- **Vendor shall send the quotation with compliance statement to individual specifications and supporting document to the statement.**

### Specifications for Demodulator Type-2 (66-73MHz)

S. No.	Parameters	Unit	Specifications
1.	Frequency Range	MHz	66-73
2.	I & Q Frequency	MHz	DC-2
3.	Amplitude unbalance maximum	dB	≤0.5
4.	Phase unbalance maximum	Degree	≤ 3
5.	Conversion loss	dB	≤ 7
6.	Operating and Storage temp	°C	0-55
7.	Connectors	SMA	SMA

#### **General requirements:**

- **Guarantee/warranty: Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.**
- **Data sheet should have circuit diagrams and performance data.**
- **Vendor shall send the quotation with compliance statement to individual specifications and supporting document to the statement.**

### Specifications for Demodulator Type-3 (800-1050MHz)

S. No.	Parameters	Unit	Specifications
1.	Frequency Range	MHz	800-1050
2.	I & Q Frequency	MHz	DC-5
3.	Amplitude unbalance maximum	dB	≤0.3
4.	Phase unbalance maximum	Degree	≤ 4
5.	Conversion loss	dB	≤ 10
6.	Operating and Storage temp	°C	0-55
7.	Connectors	SMA	SMA

#### **General requirements:**

- **Guarantee/warranty:** Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.
- **Data sheet** should have circuit diagrams and performance data.
- **Vendor** shall send the quotation with compliance statement to individual specifications and supporting document to the statement.

### Specifications for Demodulator Type-4 (9-11MHz)

S. No.	Parameters	Unit	Specifications
1.	Frequency Range	MHz	9-11
2.	I & Q Frequency	MHz	DC-2
3.	Amplitude unbalance maximum	dB	$\leq 0.3$
4.	Phase unbalance maximum	Degree	$\leq 3$
5.	Conversion loss	dB	$\leq 7$
6.	Operating and Storage temp	$^{\circ}\text{C}$	0-55
7.	Connectors	SMA	SMA

#### **General requirements:**

- **Guarantee/warranty: Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.**
- **Data sheet should have circuit diagrams and performance data.**
- **Vendor shall send the quotation with compliance statement to individual specifications and supporting document to the statement.**

### **Specifications for Filter Type-1(800-1050MHz)**

<b>S. No.</b>	<b>Parameters</b>	<b>Unit</b>	<b>Specifications</b>
1.	Frequency Range	MHz	800-1050
2.	RF Power input Max	dBm	37
3.	Insertion loss	dB	< 2.5
4.	Pass band VSWR (:1) max.	-	<=2.5
5.	Stop band rejection	dB	>=20
6.	Operating and Storage temp	°C	0-55
7.	Connectors	SMA	SMA

#### **General requirements:**

- **Guarantee/warranty: Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.**
- **Data sheet should have circuit diagrams and performance data.**
- **Vendor shall send the quotation with compliance statement to individual specifications and supporting document to the statement.**

### Specifications for Filter Type-2 (0-7MHz)

S. No.	Parameters	Unit	Specifications
1.	Pass band	MHz	0-7
2.	Cut off frequency	MHz	8
3.	Loss	dB	< 0.5
4.	RF Power input max.	dBm	27
5.	Stop band rejection  11-15 MHz 15-20MHz	dB	≥20 ≥40
6.	Operating and Storage temp	°C	0-55
7.	Connectors	SMA	SMA

#### **General requirements:**

- **Guarantee/warranty:** Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.
- **Data sheet** should have circuit diagrams and performance data.
- **Vendor** shall send the quotation with compliance statement to individual specifications and supporting document to the statement.

### **Specifications for Filter Type-3 (67-73MHz)**

<b>S. No.</b>	<b>Parameters</b>	<b>Unit</b>	<b>Specifications</b>
1.	Frequency Range	MHz	67-73
2.	RF Power input max.	dBm	27
3.	Insertion Loss max.	dB	$\leq 1.5$
4.	Pass band VSWR (:1) max.	-	$\leq 1.7$
5.	Stop band rejection	dB	$\geq 20$
6.	Operating and Storage temp	$^{\circ}\text{C}$	0-55
7.	Connectors	SMA	SMA

**General requirements:**

- **Guarantee/warranty: Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.**
- **Data sheet should have circuit diagrams and performance data.**
- **Vendor shall send the quotation with compliance statement to individual specifications and supporting document to the statement.**

### Specifications for Mixer (10-3000MHz)

S. No.	Parameters	Unit	Specifications
1.	LO/RF frequency	MHz	10-3000
2.	IF frequency	MHz	10-800
3.	Conversion loss	dB	$\leq 8$
5.	LO-IF Isolation	dB	$\geq 20$
6.	LO-RF Isolation	dB	$\geq 25$
7.	Operating and Storage temp	$^{\circ}\text{C}$	0-55
8.	Connector	SMA	SMA

**General requirements:**

- **Guarantee/warranty:** Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.
- **Data sheet** should have circuit diagrams and performance data.
- **Vendor** shall send the quotation with compliance statement to individual specifications and supporting document to the statement.



## Specifications for Modulator (66-73 MHz)

S. No.	Parameters	Unit	Specifications
1.	Frequency Range	MHz	66-73
2.	I & Q Frequency	MHz	DC-5
3.	Conversion loss	dB	< 7
4.	Carrier rejection	dBc	> 30
	Sideband rejection		> 30
5.	Operating and Storage temp	°C	0-55
6.	Connectors	SMA	SMA

### General requirements:

- **Guarantee/warranty:** Minimum of three year warranty should be given. Extended warranty if any may also be offered. The services shall be available in India.
- **Data sheet should have circuit diagrams and performance data.**
- **Vendor shall send the quotation with compliance statement to individual specifications and supporting document to the statement.**

## Annexure – II

### BANK GUARANTEE FORM FOR PERFORMANCE SECURITY

The Director  
Indian Institute of Technology Jodhpur,  
Jodhpur (India) 342011.

WHEREAS..... (Name and address of the Supplier) (hereinafter called “the Supplier”) has undertaken, in pursuance of contract no..... dated ..... (hereinafter called “the contract”) to supply .....

AND WHEREAS it has been stipulated by you in the said contract that the Supplier shall furnish you with a bank guarantee by a scheduled nationalized bank recognised by you for the sum specified therein as security for compliance with its obligations in accordance with and due performance of the contract;

AND WHEREAS we have agreed to give the Supplier such a bank guarantee;

NOW THEREFORE we hereby affirm that we are guarantors and responsible to you, on behalf of the Supplier, up to a total of .....(amount of the guarantee in words and figures), and we hereby irrevocably and absolutely undertake to pay you immediately, upon your first written demand declaring the Supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of(amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the Supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

The Bank guarantee shall be interpreted in accordance with the laws of India. The Guarantor Bank represents that this Bank Guarantee has been established in such form and with such content that is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

The Bank Guarantee shall not be affected in any manner by reason of merger, amalgamation, restructuring or any other change in the constitution of the Guarantor Bank or the Supplier. The Bank further undertakes not to revoke this Guarantee during its currency except with the previous express consent of the Buyer in writing.

The Bank declares that it has power to issue this Guarantee and discharge the obligations contemplated herein, the undersigned is duly authorized and has full power to execute this Guarantee for an on behalf of the Bank.

This guarantee shall be valid up to and including the ..... day of ....., 20.....

.....

(Signature with date of the authorised officer of the Bank)

.....

Name and designation of the officer

.....

Seal, name & address of the Bank and address of the Branch